



Professional

# IIS 7

Ken Schaefer, Jeff Cochran, Scott Forsyth, Rob Baugh, Mike Everest, Dennis Glendenning



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*Thank you, Julia, Sebastien, and Theo for putting up with the trials, tribulations, and late nights involved in writing a book, again. This would not have been possible without your love and support.*

*As the lead author, on behalf of all the authors, I'd like to thank Bob Elliot and John Sleeva and the rest of the team from Wiley for their never-ending patience whilst we put this book together.*

**Jeff Cochran** is a Senior Network Specialist for the City of Naples, Florida, and has been employed in the computer networking industry for nearly two decades. Beginning with computer bulletin boards on a Commodore 64 in the early 1980s, he has worked with nearly every method of communication via computer since. In the early 1990s, he started the first commercial ISP in Southwest Florida, using Windows NT 3.51 systems for mail, web, and FTP servers.

Jeff is married to Zina, a self-employed graphic designer, and spends his free time remodeling a 1950s home in

Naples. Although most of his personal hobbies revolve around computers, he enjoys Geocaching and collecting pinball machines, and is still addicted to Age of Empires.

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*To Zina, without whom there would be no reason to write.*

**Scott Forsyth** works for ORCS Web, Inc. as the Director of IT. ORCS Web is a Microsoft Certified Partner offering web hosting services utilizing the IIS platform for hosting of ASP.NET, SharePoint, SQL Server, Exchange and other technologies. He is a Microsoft MVP for ASP.NET, an ASP Insider and has multiple MCP certifications.

Scott is married and has two kids, Joel and Alisha, who don't work with IIS yet but do spend countless hours on the computer. When he's not in front of a computer, Scott leads a youth group at his local church, plays the drums and enjoys playing table tennis.

*For my wife, Melissa, and my children, Joel and Alisha, who patiently support me in work and writing.*

**Rob Baugh** is the VP of IT for Anres Technologies. He has been in the IT field since 1999 and has worked with IIS the entire time. He has multiple Microsoft Certified Professional certifications.

Rob is married to Stacy and they have one daughter, Emily. His passion (when away from computers) is scuba diving, so he recently relocated to Merida, Mexico to be closer to the blue waters of the Caribbean.

*Thanks to my ever faithful bride, Stacy, for supporting me throughout the many late nights spent writing.*

**Mike Everest** has had an interest in computing from the time he first laid eyes on a PC at high school in 1978. He operated a series of Bulletin Board Systems throughout the

1980s while completing his undergraduate studies and experimenting with early Internet technologies.

Mike began working with web servers in the early 1990s and established the first commercial web hosting platform in his regional hometown of Geelong, Australia. Since then, specializing in Internet infrastructure, hosting services, and ISP systems, he has participated in establishing and developing no fewer than seven technology companies, sold two, and maintains an ongoing interest in three.

Mike is delighted to have had the opportunity to contribute to this book and is more than happy to receive comments, questions, and criticisms from readers.

*Special thanks to all of the IIS 7.0 team at Microsoft, for without such an excellent product we would have nothing to write about.*

**Dennis Glendenning** (MA, MBA, MCSA+Msg, MCSE, PMP) is a Principal Systems Engineer with Avanade, where he provides design and delivery leadership for large-scale technology integration projects. Dennis's background includes graduate training, professional certifications, and a blend of technical and project management experience that spans more than 15 years. In addition to delivering technology architectures for Fortune 500 companies, Dennis has led several eCommerce infrastructure teams to leverage IIS in the public safety, insurance, and financial industries. Although he travels the United States for work, Dennis lives in Cleveland, Ohio with his wife and two children, and he revels in hiking, history, great speeches, and epic FPS PC games. Dennis can be reached at [dglendenni@hotmail.com](mailto:dglendenni@hotmail.com).

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# ***Introduction***

Windows Server 2008 is the first update to Microsoft's server operating system in nearly five years, and among the major changes is the new Internet Information Services 7.0, which probably marks the biggest departure from previous IIS versions that we have ever seen.

Previous recent releases of IIS have concentrated on improving security and reliability and thus have mostly involved changes "under the hood." For administrators and developers, adaptation to the new products had been relatively simple.

With IIS 7.0, however, Microsoft has fundamentally changed the way the product works, with new configuration, delegated administration, and extensibility options designed to address perceived feature weakness compared to competing products. At the same time, IIS 7.0 now has new, real-time diagnostic and troubleshooting features and absorbs functionality from ASP.NET (such as caching and forms-based authentication), making this available across all requests.

With the addition of a brand-new FTP server and FastCGI support, IIS 7.0 leapfrogs its major competitors in feature and flexibility options and indicates a clear effort by Microsoft to capture more of the public-facing web server market, in addition to its existing strong presence in the corporate sphere.

For administrators and developers, the fundamental changes in the way that IIS 7.0 works, is administered, and can be extended mean that the knowledge required to fully take advantage of IIS 7.0's new features is substantially greater than in previous versions.



The authors have focused on capturing the very best of the new features in IIS 7.0 and how you can take advantage of them. The writing styles vary from chapter to chapter because some of the foremost experts on IIS 7.0 have contributed to this book. Drawing on our expertise in deployment, hosting, development, and enterprise operations, we believe that this book captures much of what today's IIS administrators need in their day-to-day work.

## **Who This Book Is For**

This book is aimed at IIS administrators (or those who need to ramp up quickly in anticipation of having to administer IIS). What differentiates this book is that it doesn't just focus on features and how to configure them using a GUI administrative tool. Instead, we explain how features work (for example, how Kerberos authentication actually works under the covers) so that you can better troubleshoot issues when something goes wrong.

Additionally, since most administrators need to be able to automate common procedures, we have included specific chapters on programmatic administration and command-line tools as well as code snippets (using AppCmd.exe, WMI, and .NET) throughout the book.

This book covers features that many other IIS books don't touch (such as high availability and web farm scenarios, or extending IIS) and has a dedicated chapter on troubleshooting and diagnostics.

Real-life IIS administration is about people, processes, and technology. Although a technical book can't teach you much about hiring the right people, this book doesn't focus solely on technology. Operations management and monitoring (key components of good processes) are also addressed.

Overall, we think that this book provides comprehensive coverage of the real-life challenges facing IIS administrators:

getting up to speed on the new features of a product, understanding how the product works under the covers, and being able to operate and manage the product effectively over the long term.

## **How This Book Is Structured**

The book is divided into four major parts. Part I covers the new features and architecture of IIS 7.0, as well as deployment and installation considerations.

Part II discusses the basics of the new administration tools (both GUI and command-line) as well as basic administrative tasks for web sites, delegated administration, and supporting services (such as FTP, SMTP, and publishing options).

Part III introduces more advanced topics, such as extending IIS 7.0, programmatic administration, web farms and high availability, and security.

Finally, Part IV covers topics that go beyond the initial understanding of the new feature set. We cover topics that administrators will need on an ongoing basis, such as operations management, performance monitoring and tuning, and diagnostics and troubleshooting.

## **What You Need to Use This Book**

Although IIS 7.0 ships in both Vista and Windows Server 2008, certain functionality (such as load balancing) is available only in the server edition. Because the full functionality of IIS 7.0 is available in Windows Server 2008, the authors have focused on that product for this book.

For IIS 7.0 extensibility, Microsoft Visual Studio 2008 has been used throughout the book; however, any IDE suitable

for .NET development can be used for implementing the code samples presented.

## Conventions

To help you get the most from the text and keep track of what's happening, we've used several conventions throughout the book.

### Sidebar

**Boxes like this one hold important, not-to-be forgotten information that is directly relevant to the surrounding text.**

*Tips, hints, tricks, and asides to the current discussion are offset and placed in italics like this.*

As for styles in the text:

- We *highlight* new terms and important words when we introduce them.
- We show keyboard strokes like this: *Ctrl+A*.
- We show file names, URLs, and code within the text like `SO: persistence.properties`.
- We present code in two different ways:

In code examples we highlight new and important code with a gray background.

The gray highlighting is not used for code that's less important in the present context, or has been shown before.

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# ***Part I***

## ***Introduction and Deployment***

**Chapter 1: Background on IIS and New Features in IIS 7.0**

**Chapter 2: IIS 7.0 Architecture**

**Chapter 3: Planning Your Deployment**

**Chapter 4: Installing IIS 7.0**

# ***Chapter 1***

## ***Background on IIS and New Features in IIS 7.0***

Microsoft's Internet Information Services (IIS) has been around for more than a decade, from its first incarnation in Windows NT 3.51 to the current release of IIS 7.0 on the Windows Server 2008 and Vista platforms. It has evolved from providing basic service as an HTTP server, as well as additional Internet services such as Gopher and WAIS, to a fully configurable application services platform integrated with the operating system.

IIS 7.0 is a dramatic change in the way IIS is configured and managed. Modularity, granularity, and interoperability are the guiding factors across the entire product, from setup to security, management to automation. Integrated heavily into the operating system, IIS 7.0 benefits from the improvements in the Windows Server 2008 operating system but IIS has been re-engineered to meet the demands of a true application platform.

This chapter will provide you with an overview of the changes in IIS 7.0 as well as a sampling of some of the new technologies. If you are familiar with IIS 6.0, you will want to skim through this chapter for changes before digging into future chapters for specifics. If you are new to IIS, this chapter will provide an introduction to the features in IIS 7.0 and provide you with a basis for understanding future chapters. And if you're the kind of reader who just wants to skip to the part that applies to your immediate needs, this



chapter can help you figure out in what area those needs will lie.

## **IIS Versions 1.0 to 4.0**

IIS was released with Service Pack 3 for Windows NT 3.51, as a set of services providing HTTP, Gopher, and WAIS functionality. Although the functions were there, most users chose alternates from third-party vendors such as O'Reilly's Website or Netscape's server. Although these services had been available for years with the various flavors of UNIX operating systems, native Internet services for Windows were mostly an afterthought, with little integration with the Windows operating system.

With the advent of Windows NT 4.0, IIS also matured in version 2.0. The most notable improvement in IIS version 2.0 was closer integration with the Windows NT operating system, taking advantage of Windows security accounts and providing integrated administration through a management console similar to many other Windows services. IIS 2.0 introduced support for HTTP Host headers, which allowed multiple sites to run on a single IP address, and aligned Microsoft's IIS development with NCSA standards, providing for NCSA common log formats and NCSA-style map files. IIS 2.0 also introduced a web browser interface for management, and content indexing through Microsoft's Index Server.

IIS version 3.0 was introduced with Windows NT Service Pack 3 and introduced the world to ASP (Active Server Pages) and Microsoft's concept of an *application server*. A precursor to the ASP.NET environment, ASP (now referred to as *classic ASP*) is a server-side scripting environment for the creation of dynamic web pages. Using VBScript, JScript or any other active scripting engine, programmers finally had a

viable competitor to CGI and scripting technologies available on non-Microsoft platforms, such as Perl.

IIS 4.0, available in the NT Option Pack, introduced ASP 2.0, an object-based version of ASP that included six built-in objects to provide standardized functionality in ASP pages. IIS 4.0 was the last version of IIS that could be downloaded and installed outside of the operating system.

## **IIS 5.0 and 5.1**

With the release of Windows 2000, IIS became integrated with the operating system. Version numbers reflected the operating system, and there were no upgrades to IIS available without upgrading the operating system. IIS 5.0 shipped with Windows 2000 Server versions and Windows 2000 Professional, and IIS version 5.1 shipped with Windows XP Professional, but not Windows XP Home Edition. For all essential functions, IIS 5.0 and IIS 5.1 are identical, differing only slightly as needed by the changes to the operating system.

With Windows 2000 and IIS 5.0, IIS became a service of the operating system, meant to be the base for other applications, especially for ASP applications. The IIS 5.0 architecture served static content, ISAPI functions, or ASP scripts, with ASP script processing handed off to a script engine based on the file extension. Using file extensions to determine the program that handles the file has always been a common part of Windows functionality, and in the case of ASP processing, the speed of serving pages was increased by the automatic handoff of ASP scripts directly to the ASP engine, bypassing the static content handler. This architecture has endured in IIS to the current version.

## **IIS 6.0**